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Information Services
Opportunities & Trends, 1994-1999

Miscellaneous Industries

U.S. Market Analysis Program

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Miscellaneous Industries

May 1994

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Miscellaneous Industries

Information Services Opportunities and Trends, 1994-1999 Forecast Update

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Exhibits

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I

Introduction

A Purpose

This report provides the 1994 INPUT forecasts for the miscellaneous industries sector, which encompasses the agriculture and construction vertical markets.

- A discussion of recent market issues, trends and technological factors that influence this sector is included.
- In particular, the use of client/server technology and workstation solutions is examined as key technological factors that are important to the agriculture and construction markets.

This report concentrates on information services provided to those areas of the agricultural production and construction industries which are large enough to be of interest to information services vendors.

Segments of the agricultural production industry that are analyzed further are those identified by the two-digit SIC classifications 01 and 02. Also included within the agricultural production classification are the forestry and fishing industries. The agricultural services industry, identified under SIC code number 07, includes such subcategories as soil preparation services, crop services, veterinary services and farm labor management services.

The agricultural segments analyzed include establishments classified with the SIC 01 designation—primarily engaged in the production of crops, plants, vines and trees (excluding forestry operations)—as well as establishments classified with the SIC designation 02. These establishments include farms, ranches,

dairies, feedlots, egg production facilities, broiler facilities, poultry hatcheries and apiaries—primarily engaged in the keeping, grazing, or feeding of livestock for the sale of livestock or livestock products. Livestock, as used here, includes cattle, hogs, sheep, goats and poultry of all kinds.

The segments of the construction industry analyzed include three broad types of construction activity:

1) Building construction by general contractors or by operative builders

2) Heavy construction other than building by general contractors and special trade contractors

3) Construction activity by other special trade contractors.

- Special trade contractors are primarily engaged in specialized construction activities—such as plumbing, painting and electrical work and work for general contractors under subcontract or directly for property owners. General contractors usually assume responsibility for an entire construction project, but may subcontract to others all of the actual construction work or those portions of the project that require special skills or equipment. Therefore, general contractors may or may not have construction workers on their payroll.

- The specific construction groups that will be analyzed include SIC 15—Building Construction—General Contractors and Operative Builders; SIC 16 —Heavy Construction other than Building Construction Contractors; and SIC 17—Construction—Special Trade Contractors.

The analysis of the information services industry in this report covers all three of the noted industry segments.

B Organization

This section, Chapter I—Introduction, describes the purpose and organization of the report. The remainder of this report is organized as follows:

Chapter II, Trends, Events and Issues—reviews the business issues and technological factors that are influencing the use of information services in the agricultural production and construction markets.

Chapter III, Information Services Market—analyzes the use of information services for the Miscellaneous Sector.

Appendix A—contains the forecast database, presents a detailed forecast for the Miscellaneous Sector by information services product/service market and selected subsector, together with a reconciliation to the 1993 forecast.

Appendix B is a index of companies mentioned in the report.

C
Related Reports

Reports related to this Miscellaneous Industries sector report include:

- *Discrete Manufacturing Sector*, 1994-1999
- *Business Services Sector*, 1994-1999
- *Retail Distribution Sector*, 1994-1999

These reports are all part of INPUT's Market Analysis Program, which provides a set of industry and cross-industry reports to describe the information services industry.

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II

Trends, Events and Issues

A Overview

This chapter discusses the factors that will have an impact on the markets for information services in the agricultural production and construction industries during the period 1994 to 1999.

The trends, events and issues that are and will be affecting this sector have to be examined from the perspective of each of its components—the agricultural production and construction markets.

- These markets seem to be in better shape in 1994 than they have been in the last two years. Both markets, however, still have areas of uncertainty that are affecting current planning.
- Interest in using computing technology to manage and plan more effectively is also rising in both markets, despite a reluctance to invest in supplies and equipment.

B Agricultural Industry Analysis

Conditions are very favorable for the agricultural market, in general, at this time.

- Although considered a mature market, the value of agricultural product shipments should grow by 2.7% in 1994—from $404 billion to $415 billion. This is the highest percent increase since the 5.4% change from 1989 to 1990.

Despite the massive flooding in the midwest in 1993, farmers expect few ill effects in the long term. The federally-supported,

farmers-owned Farm Credit System is offering deference's and restructured loans to quickly help rebuild devastated farm resources.

- Agricultural exports are expected to reach $24 billion in 1994—a 6% rise from 1993. The top three U.S. trading partners, Japan, Canada and Mexico, are the destination for more than 50% of these exports.

- Japan's recession has weakened its buying power, but has somewhat opened its agricultural markets. The country's rice market, inaccessible for years due to government protection, has recently lowered its barriers to U.S. growers.

However, there are continuing problem areas that could have a negative impact on agriculture during the next few years.

- As a mature industry, the overall value of agricultural products is only expected to grow 1% annually through 1999.

- Federal government policy and international treaties could have significant impacts on overseas business. France, for example, is still highly resistant to lowering import barriers for agricultural products from the U.S. and other General Agreements on Trade and Tariffs (GATT).

- Ironically, the construction industry poses a threat to agriculture as a growing population fuels the need for more housing on undeveloped or farm land.

The impact of the foregoing events and trends will cause farmers and others involved in agricultural production to maintain a cautious attitude toward costs and increase their interest in careful planning. Farmers are increasingly using information services and technology to better access and manage data crucial to their businesses.

C
Construction Industry Analysis

Although the number of companies in the construction industry has declined during the past few years due to the recession, there

is hope that the volume of construction work will increase sufficiently during the next few years, to reverse the trend.

- The total value of new construction will grow by about 2% in 1994, while housing starts will reach 1.3 million—an increase of 4% over 1993.
- The continuing tendency in the construction industry is for the number of firms to decrease during downturns and increase during recoveries. Modest economic growth offset by higher fixed interest rates from the Federal Bank, will not affect the number of firms very much.
- There has been a limited resurgence in some areas of the construction market during the last year, particularly in remodeling existing structures, but this has not been sufficient to encourage the formation of new firms or increase the size of present firms to any meaningful extent. The activity of existing firms will likely increase in 1994 as a result of construction fueled by midwest floods and the fires and earthquake in L.A.

There are marketplace factors that could inhibit recovery of the construction industry, however.

- Many buildings and facilities that were built in the late 1980s are not fully utilized, and this inhibits further construction in a number of industries.
- The slow sales of new residential real estate have continued to be a negative factor, although sales in late 1993 and early 1994 showed promise. However, should interest rates rise further, the market would deflate in latter 1994 as prospective buyers hold out for falling rates.

D
Business Issues

There are some common issues in both segments of the miscellaneous industries sector that have an impact on the use of information services. As described in the foregoing sections, agricultural production and construction are affected by recession and conscious of the need to control costs and increase planning.

- Both segments are reluctant to invest in new equipment and supplies until the recovery has reached higher levels. Considering that the average tractor is 19 years old, farmers, at least, invest carefully and for the long-term.

- However, both segments are looking for improvements in the use of information technology that can aid in cost control and planning.

These segments also share other common issues. They are both very concerned about and reliant upon government programs and activities.

- Agricultural producers expect government price supports to provide a good revenue base this year and hold out hope government credits to foreign nations will add to their opportunities.

- Construction firms hope that a general government economic stimulus package will generate increased construction revenues. In some localities, notably California and the Northeast, have growth management policies that unfortunately inhibit new construction.

Both segments of the miscellaneous industries sector have also responded positively to expanding workstation/PC capabilities.

- A number of construction firms have converted from minicomputer to workstation/PC-based turnkey systems. For example, Fluor-Daniel Construction has a client/server network with 1,500 users sharing distributed costing, planning and inventory applications.

- Many agricultural producers have started to use computing or moved from remote or batch processors to workstations or personal computers as a result of the improved cost/performance ratio of this equipment. Monsanto Corp. has developed an Apple Newton-based PDA for use by farmers and industry professionals for agricultural management applications.

An issue in which there is more difference between the interests of agriculture and construction companies is a concern about the intensity of the recovery.

- Construction firms feel that a high level of recovery could reduce unused space and generate a period of real growth for the industry, which would stimulate the use of information services.

- Although agricultural producers are hopeful that a recovery will add to consumption of their products, they do not give the same importance to a high level of recovery.

E
Impact of Technology

Although there are differences in the use of information technology between the two segments of miscellaneous industries sector, both segments have been recognized as markets for turnkey systems and electronic information services (EIS or on-line databases).

- Agricultural producers rely heavily on the use of EIS for equipment, crop, warehouse, shipping, commodity pricing and other data. Cross-industry vendors such as Reuters and Dow Jones are also used, as well as specialists such as Agridata Resources and Redwing Business Systems.

- Agricultural producers are also heavy users of industry-specific systems based on personal computer platforms chiefly supplied by firms specializing in agriculture, such as Kitkey Systems and Harvest Computer Systems. They are used for accounting, payroll, livestock and crop record-keeping, supplies, reporting and management functions. Applications software products sold separately from turnkey systems are increasing in use. Vision Harvest has developed NeuroVision, a neural network application to allow robots to pick chili peppers. The product uses texture classification code to help the robots tell the actual peppers from its leaves.

- The construction industry is also a user of EIS, although much less of the information systems budget is spent on this service than is the case in agriculture. Vendors such as R.S. Means and Marshall & Swift, which specialize in EIS for this industry, supply data on building material and other costs.

- Turnkey systems—such as those supplied by Profitool (which address accounting, job costing, project management and scheduling), has been popular in construction. However, leading vendors in the industry—such as Concord, Bidtek and Timberline—have turned more toward the sale of applications products that are independent of the sale of computers.

Both segments of miscellaneous industries have been stimulated by developments in workstation/PC technology, as noted in the last section, but Construction firms have been much more interested in developments in information technology in general.

- Construction firms are using graphical interface tools, such as those from Softouch, to aid in estimating and managing the cost of projects.

- A group of vendors that serve the construction industry including Bidtek and Concord Management Systems, have been developing open systems software products. To a lesser extent, some software product companies that serve the agricultural market have been developing open system products as well. KitKey systems has implemented its own open technology in an AS/400-based network for Sunkist Growers, Inc.

III

Information Services Market

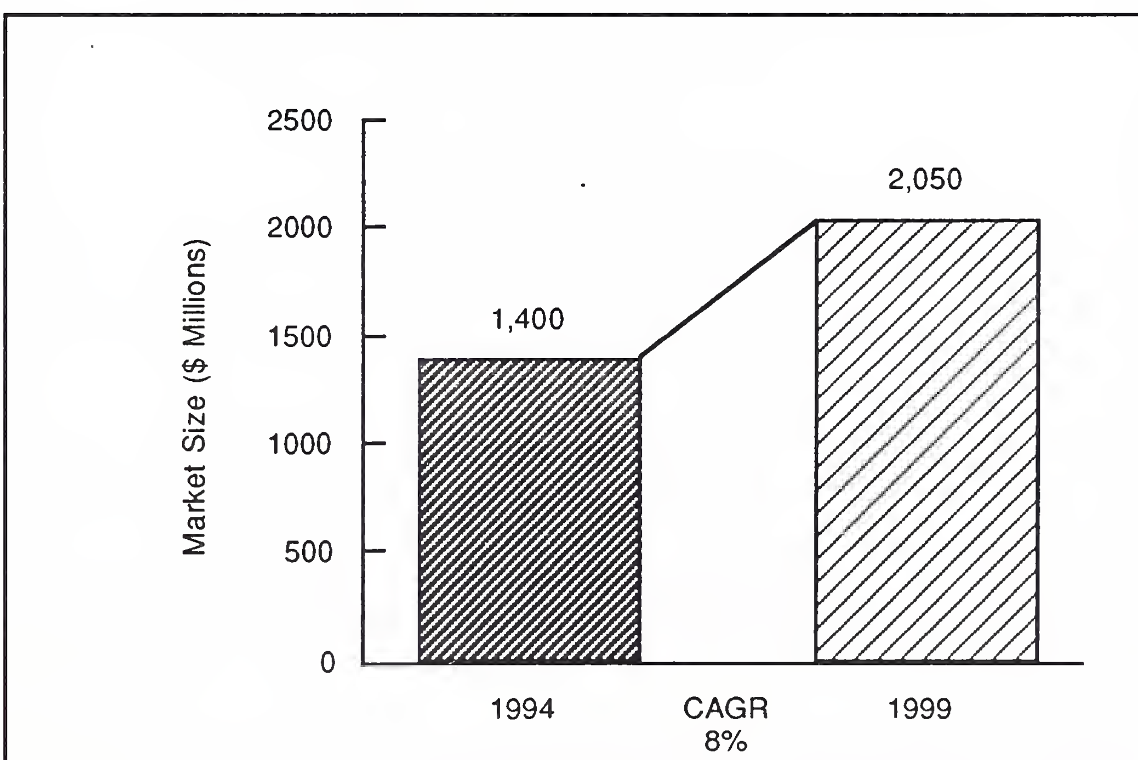
A Overview

1. Overall Information Services Market

The size and growth of the Miscellaneous Industries market and its two components are depicted in Exhibit III-1.

Exhibit III-1

Miscellaneous Industries Sector, 1994-1999



2. Agriculture

The total miscellaneous sector grew 8% over 1993, from $1.3 billion to more than $1.4 billion. This 8% is the highest year-to-year growth INPUT has reported for this market in roughly five years.

Overall, the miscellaneous sector has benefited from the slow, but sure recovery from the U.S. recession of 1991-1992. Construction in particular is prey to interest rates, employment figures and consumer wealth. With the exception of rising interest, economic conditions have created favorable conditions for commercial and residential construction. Agriculture, as well, benefits from beneficent economic conditions, such as the North American Free Trade Agreement, which has lowered barriers and increased Canadian and Mexican power to buy U.S. agricultural products.

B
Product/Service Market Analysis

Exhibits III-2 shows the size and CAGR for each product/service market in the miscellaneous industry market segment.

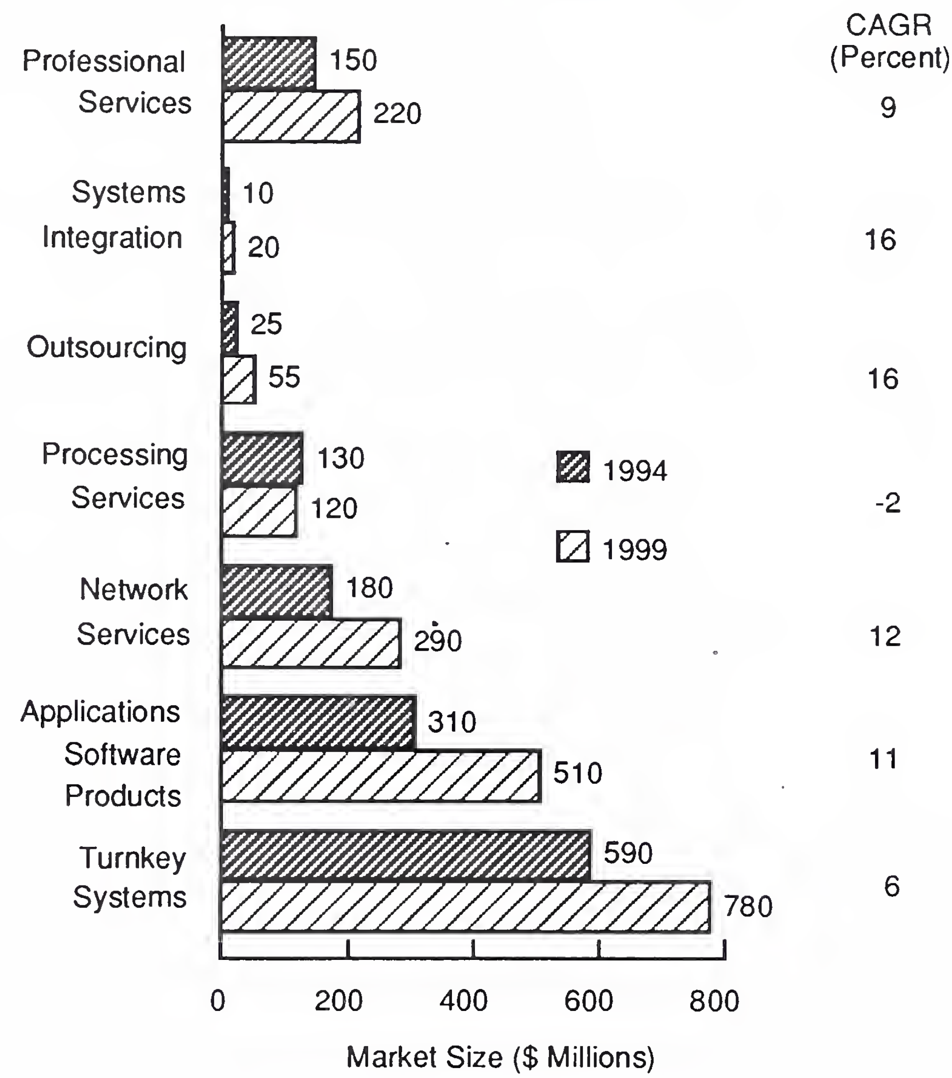
1. Processing Services

In the agricultural production market, remote processing is primarily done for payroll and accounting services for small and midsized farms, for whom it is more cost-effective to use external services.

- These types of services are provided by traditional payroll processing companies, banks and accountants.
- This market is shrinking as the rate of personal computer installations on farms expands.

Exhibit II-2

U.S. Miscellaneous Market Forecast by Product/Service Market, 1994-1999



Note: Values have been rounded

The estimated size of the remote processing services market in 1994 will be about $1345 million and will shrink to $122 million by 1999.

In the construction industry, processing services have been used for industry-specific applications such as project management and scheduling, as well as accounting and payroll.

- However, construction industry-specific applications systems, as well as payroll and accounting services, have been moving in-house as the cost of entry-level computer systems decreases.

2. Network Services

Network services are much more important to the agricultural segment of miscellaneous industries, due to the geographical distribution and remoteness of American farms.

- This product/service market addresses a broad range of farm operations with needs for an expanding number and variety of data bases and other types of network applications, including electronic mail and EDI.

In the construction industry, the principal network service is the on-line database market for construction cost data.

- A small number of vendors offer such services. The largest is R.S. Means, with an estimated two-thirds of the total market.
- These vendors also market software products with their services, such as estimating systems that can use the current database information. Other vendors also provided linkages to these databases for estimating software applications. Primavera Systems, Inc. is one such vendor.

Another important network service for the construction industry is electronic data interchange (EDI) which provides on-line structured document delivery among suppliers, vendors and customers. In fact, construction contractors and subcontractors may act as a "Virtual Corporation" during a project, acting as one electronically-linked company formulating, sharing and acting on contract documents and data.

3. Applications Software Products

Almost 70% of software solutions sold to the agricultural production market in 1993 will be supplied as part of a small-scale turnkey system.

- Most producers have obtained software products and low-cost PC solutions from a single vendor in order to assure themselves of support.
- The availability of low-cost equipment and a number of choices in software products have led agricultural producers to look for solutions that more nearly meet their needs. Many agricultural functions have little in common with those in

other industries. Therefore, industry-specific vendors noted earlier must provide more turnkey-like support for customers unable to get applications from cross-industry vendors.

The use of software products in construction has been influenced by two factors during the last few years.

- There is a segmentation in the industry between the general contractor (commercial/public works, including highway construction and home builders) and subcontractor markets. The needs of these groups differ. Some software products vendors supply only one of these segments. Porak Computing typically works with small construction companies with proportionately less demanding logistical needs than large commercial firms.
- There has been a trend toward using PC- or workstation-based solutions rather than those based on minicomputers. This is because these platforms are more portable, which is practical for applications use at a mobile job size.

4. Professional Services

Much of the need for professional services in the agricultural production market, particularly custom development or modification of software products, has been provided by independent software products vendors and turnkey systems suppliers at a combined price, in many cases, with other services and products.

There has been more demand for customized development in the construction market, but it has been curtailed by the recent economic situation. The beginning of a recovery and technological factors, such as the use of local-area networks (LANs), is encouraging more growth.

5. Systems Integration

There remains little evidence of systems integration solutions use among agricultural producers, although some large ones, such as Pioneer Hi-Bred International, have begun implementing distributed systems that could require this product/service market.

There is a higher level of use of SI in the construction segment, where there is a need for future systems that will use multiplatform/multivendor connectivity and the use of relational database capability.

6. Turnkey Systems

Turnkey system services has been the major product/service market utilized in the miscellaneous industries sector.

In the agricultural production market, current sales of turnkey systems are primarily through VARs that specialize in this market.

- Users that are moving work in-house from processing services vendors may be acquiring a turnkey product offered by one of these vendors that also acts as a value-added reseller (VAR).
- First-time users that want an economic solution and/or the support of a dealer are also attracted to turnkey vendors. These vendors may also appeal to users that want to upgrade their capabilities, although these users usually evaluate software and hardware products separately.

Turnkey systems is more dominant in the construction industry, where vendors have been the source of information and technical assistance in regard to the use of new technologies such as imaging, networks and open systems. Turnkey systems vendors, such as Bidtek, have also been responsible for providing information on industry needs such as project management and bidding.

7. Systems Operations

There is very little interest in systems operations in the agricultural industry, possibly because applications software and turnkey vendors supply a high level of support to industry users.

The primary market for systems operations is among midsized and larger construction firms that are seeking methods of obtaining the benefits of automation while limiting their investments in equipment and software products.

A

Forecast Database and Reconciliation

A
Market Structure and Forecast Database

Miscellaneous industries is defined as including the following segments:

- Agricultural production
- Construction

As part of an INPUT market redefinition, the agricultural and construction segments were each re-evaluated in 1990 to develop new constituent forecasts for the Miscellaneous Industries sector. Exhibit A-1 presents the consolidated forecast for the sector.

Exhibit A-1

U.S. Miscellaneous Industries User Expenditure Forecast by Product/Service Sector, 1994-1999

Product/Service Sectors	1993 ($M)	93-94 %GR	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	CAGR 94-99 (%)
Sector Total	1,300	8	1,403	1,511	1,613	1,743	1,868	2,043	8
Professional Services	142	8	154	168	183	200	216	233	9
- IS Consulting	35	11	39	43	49	54	61	66	11
- Education & Training	21	10	23	25	27	29	30	34	8
- Custom Software	86	7	92	100	107	117	125	133	8
Systems Integration	9	11	10	12	14	16	19	21	16
- Equipment	4	25	5	6	6	7	9	11	17
- Software Products	1	0	1	1	1	1	1	1	0
- Professional Services	4	0	4	5	7	8	9	9	18
Outsourcing	22	16	26	30	35	40	47	54	16
- Platform Operations	8	7	8	9	10	11	12	13	10
- Application Operations	10	20	12	13	15	17	19	22	13
- Desktop Services	3	20	3	4	5	6	7	8	22
- Network Management	2	25	3	4	5	6	9	11	30
Processing Services	137	-2	134	132	129	126	124	122	-2
- Transaction Processing	137	-2	134	132	129	126	124	122	-2
Network Services	161	12	181	204	231	261	286	319	12
- Electronic Info Services	150	13	169	190	215	243	265	294	12
- Network Applications	11	9	12	14	16	18	21	25	16
Application SW Products	284	8	306	334	365	405	446	510	11
- Mainframe	13	-8	12	11	11	10	9	9	-6
- Minicomputer	100	4	104	108	112	115	117	120	3
- Workstation/PC	171	11	190	215	242	280	320	381	15
Turnkey Systems	545	9	592	631	656	695	730	784	6
- Equipment	238	5	249	259	256	264	270	275	2
- Software Products	205	10	225	246	256	278	292	324	8
- Professional Services	102	16	118	126	144	153	168	185	9

B
Forecast Reconciliation

Exhibit A-2 presents the forecast reconciliation for the Miscellaneous Industries sector.

There are only slight differences from the 1993 report: A moderate decrease in turnkey systems for 1993, due to some of this market share going to applications software vendors.

- Somewhat slower growth in network services as market use matures. Robust growth in this market will occur in the next two to three years, then level off.
- A slight dip in applications software compound growth as products are purchased early in the forecast period, then merely upgraded further in time.

Exhibit A-2

Miscellaneous Industries
1994 MAP Database Reconciliation ($ Millions)

Product/ Service Market	1993 Market				1998 Market				93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
	1993 Market (Forecast) ($M)	1994 Report (Actual) ($M)	*Variance From 1993 Forecast* ($M)	*Variance From 1993 Forecast* (%)	1993 Market (Forecast) ($M)	1994 Report (Forecast) ($M)	*Variance From 1993 Forecast* ($M)	*Variance From 1993 Forecast* (%)		
Total	1,307	1,300	-7	-0	1871	1868	-3	-0	7	8
Professional Services	145	142	-3	-2	220	216	-4	-2	9	9
Business Integration	9	9	0	0	19	19	0	0	16	16
Outsourcing	23	22	-1	-4	46	47	1	2	15	16
Processing Services	137	137	0	0	124	124	0	0	-2	-2
Network Services	158	161	3	2	286	286	0	0	13	12
Applications Software	280	284	4	1	446	446	0	0	10	9
Turnkey Systems	555	545	-10	-2	730	730	0	0	6	6

B

List of Companies

Vendors and users of information services mentioned in this report include:

- Agridata Resources
- Bidtek
- Concord Management Systems
- Dow Jones
- Fluor-Daniel Construction
- Harvest Computer Systems
- Kitkey Systems
- Marshall & Swift
- Monsanto Corporation
- Pioneer Hi-Bred International
- Porak Computing
- Primavera Systems, Inc.
- Profitool

- Redwing Business Systems
- R.S. Means
- Softouch
- Sunkist Growers, Inc.
- Timberline
- Vision Harvest